CLAIMS

What is claimed is:

1.   A method for quantification of strain imaging comprising the steps of:

    (a)   performing a motion analysis on at least two selected regions of interest (ROI) before and after tissue compression;

    (b)   providing a strain estimate for each of the at least two ROIs; and

    (c)   comparing the strain estimates of each of the at least two ROIs to quantify the strain for the at least two ROIs.

2.   The method of claim 1 wherein the performing step (a) comprises the steps of:

    (a1)   generating a plurality of blocks for each of the at least two ROIs; and

    (a2)   utilizing a block matching technique to perform a motion analysis on each of the at least two ROIs.

3.   The method of claim 2 wherein each of the plurality of blocks touch a boundary of the at least two ROIs.

4.   The method of claim 1 wherein the providing step (206) (b) is performed in accordance with the equation:

$$ST = \left\| \sum_{i=i_1}^{i_2} \frac{(a_i - b_i)}{d_i} \right\| x100\%$$

where ST is the strain estimate; and where a_i and b_i are the displacement components for two blocks, which cross over the boundary of a specific ROI, in the direction of i-th A-line, d_i is a

7   distance between the two blocks, and i_1 and i_2 are indices along an A-line on a B-mode image

8   covering the ROI.

1   5.   A method for quantification of strain imaging comprising the steps of:

2   (a)   performing (206) a motion analysis on a plurality of selected regions of interest

3   (ROIs) (302 and 304; the performing step (a) further comprises the steps of: (a1) generating a

4   plurality of blocks (150) for each of the at least two ROIs (302 and 304); and (a2) utilizing a

5   block matching technique to perform a motion analysis on each of the plurality of ROIs (302

6   and 304), wherein each of the plurality of blocks (150) touch a boundary of the at least two

7   ROIs (302 and 304);

8   (b)   providing a strain estimate for each of the plurality of ROIs (302 and 304; and

9   (c)   comparing (208) the strain estimates of each of the plurality of ROIs to quantify

10 the strain for the at least two ROIs (302 and 304).

1   6.   The method of claim 5 where the strain estimate is performed in accordance with

2   the equation:

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$$ST = \left\| \sum_{i=i_1}^{i_2} \frac{(a_i - b_i)}{d_i} \right\| x100\%$$

4

5   where ST is the strain estimate; and where a_i and b_i are the displacement components for

6   two blocks, which cross over the boundary of a specific ROI, in the direction of i-th A-line. d_i is

7   a distance between the two blocks, and i_1 and i_2 are indices along an A-line on a B-mode image

8   covering that specific ROI.

1   7.   A computer readable medium for quantification of strain imaging including

2   program instructions for:

3   (a)   performing (204) a motion analysis on at least two selected regions of interest

4   (ROI) before and after tissue compression;

5   (b)   providing (206) a strain estimate for each of the at least two ROIs; and

6   (c)   comparing (208) the strain estimates of each of the at least two ROIs to quantify

7   the strain for the at least two ROIs.

1   8.   The computer readable medium of claim 7 wherein the performing (206) step (a)

2   comprises the steps of:

3   (a1)   generating a plurality of blocks (150) for each of the at least two ROIs (302 and

4   304); and

5   (a2)   utilizing a block matching technique to perform a motion analysis on each of the

6   at least two ROIs (302 and 304).

1   9.   The computer readable medium of claim 7 wherein each of the plurality of

2   blocks touch a boundary of the at least two ROIs (302 and 304).

1   10.   The computer readable medium of claim 7 wherein the providing step (206) (b)

2   is performed in accordance with the equation:

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$$ST = \left\| \sum_{i=i_1}^{i_2} \frac{(a_i - b_i)}{d_i} \right\| x100\%$$

4

5   where ST is the strain estimate; and where a_i and b_i are the displacement components for

6   two blocks, which cross over the boundary of a specific ROI, in the direction of i-th A-line, d_i is

7   a distance between the two blocks, and i_1 and i_2 are indices along an A-line on a B-mode image

8   covering that specific ROI.

1   11.   A computer readable medium for quantification of strain imaging having

2   program instructions for:

3   (a)   performing (206) a motion analysis on a plurality of selected regions of interest

4   (ROIs) (302 and 304); the performing step (a) further comprises the steps of: (a1) generating a

5   plurality of blocks (150) for each of the plurality of ROI s(302 and 304);

6   (a2)   utilizing a block matching technique to perform a motion analysis on each of the

7   plurality of ROIs (302 and 304), wherein each of the plurality of blocks touch a boundary of the

9   plurality of ROIs (302 and 304) ;

10   (b)   providing (206) a strain estimate for each of the plurality of ROIs; and

11   comparing (208) the strain estimates of each of the plurality of ROIs to quantify the strain for

12   the at least two ROIs (302 and 304).

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14   12.   The computer readable medium of claim 11 where the strain estimate is

15   performed in accordance with the equation:

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$$ST = \left\| \sum_{i=i_1}^{i_2} \frac{(a_i - b_i)}{d_i} \right\| x100\%$$

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18   where ST is the strain estimate; and where a_i and b_i are the displacement components

19   for two blocks, which cross over the boundary of a specific ROI, in the direction of i-th A-line.

20   d_i is a distance between the two blocks, and i_1 and i_2 are indices along an A-line on a B-mode

21   image covering that specific ROI.

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